GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MARCH 13, 1889.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The Railroad in Horticulture.—Lawn Plants for Dry Regions.—The Wood of the Tupelo.—The Forest Belt of Northern Mexico.—Results of an Exhausted Pine Supply 121

Recent Botanical Discoveries in China ..... *W. B. Hemsley.* 122

The Railroad Station at Auburndale (with illustrations) 124

FOREIGN CORRESPONDENCE:—London Letter ..... *W. Watson.* 125

CULTURAL DEPARTMENT:—Forwarding Vegetable Plants ..... *W. F. Massey.* 127
White Sports Among Roses ..... *W. H. Taplin.* 128
Orchid Notes ..... *A. Dimmock.* 128

Principles of Physiological Botany. XI ..... *Professor George Lincoln Goodale.* 128

CORRESPONDENCE:—The Drayton Garden ..... *S.* 129

THE AMERICAN POMOLOGICAL SOCIETY:—The Meeting at Ocala, Florida. II 130
Report of the Sub-Tropical Fruit Committee 130
Varieties of the Sweet Orange ..... *E. H. Hart.* 131
The Lemon in Florida ..... *H. S. Kedney.* 131

EXHIBITIONS:—The Recent Orchid Exhibition in this City 131

NOTES 132

ILLUSTRATIONS:—Plan of the Grounds of the Auburndale Station, Boston and Albany Railroad Company 124
Auburndale Station 126
Another View of the Same Station 127

The Railroad in Horticulture.

THE service which the railroad is capable of performing in the development of horticultural taste and knowledge is considerable. Every inhabitant of a town visits the railroad-station, and if the town is in the neighborhood of a city, a considerable portion of the population passes through the station six days out of seven. The impression it makes, therefore, is powerful and lasting.

Railroad-managers, or some of the more far-sighted among them, long ago perceived that a well-built and well-equipped station is the best advertisement that can be set up in a country town, and that the first impressions received by a stranger in arriving by rail have much to do in determining his choice of a home, and railroad-gardening has, therefore, come to be considered a necessary part of construction and maintenance among prosperous and progressing companies seeking to develop local passenger business.

It must be confessed, however, that up to the present time railroad-gardening has failed, with few exceptions, to accomplish what the public has a right to expect of it from an artistic point of view, and that instead of using their opportunities for increasing the taste and knowledge of the communities they serve, railroad managers have generally been satisfied to reproduce all that was glaringly bad in the prevailing horticultural fashion of the time. This was, perhaps, inevitable, and it will be inevitable so long as men trained in other pursuits and engrossed in absorbing occupations feel that in these matters of taste and special knowledge they need not call for the advice of an expert of a higher class than the ordinary jobbing gardener. It is the old story—a man employs an architect to build his house, but thinks he needs no advice in laying out the park that surrounds it.

The principles which underlie good railroad-gardening are simple. They relate—so far as such gardening has yet been attempted—to the improvement of the immediate surroundings of country stations, and to the shaping and turfing of the slopes rising or falling from the permanent way.

The essential features in the surroundings of a station are: convenient and abundant approaches, and some treatment of the ground not needed for the approaches. This treatment should be at once economical and permanent, and of a character simple enough to be successfully maintained by the station-master and his assistants, under the inspection and with the occasional advice of a higher officer charged with the management of the horticultural affairs of the corporation. The selection of a general system of treatment is the only difficult part of the undertaking, and it is here that railroad-managers have usually failed. Most railroad-gardens—and this is as true of Europe as of America—consist of a badly laid out and constructed approach, bordered with turf in which are cut as many large and often grotesquely-shaped beds as can be crowded in, filled during four months of the year with the most showy and ill-assorted plants and quite bare of all covering during the remaining eight months; of a few shrubs, mutilated almost past recognition by bad pruning, and a clump of Pampas grass to complete the decoration. Not infrequently this arrangement is varied by the introduction of the name of the station printed in bold characters with large white stones, or by pattern-beds of gay-colored sand or pebbles—mere "toys," as Bacon wrote three centuries ago, "you may see as good sights many times in tarts."

Station-grounds thus arranged are not artistic, and therefore are bad from the point of view of the public. They are enormously expensive and difficult to maintain, and therefore are bad from the point of view of the railroad. It is evident that no railroad corporation, however prosperous, can go on year after year decorating station-grounds on a system which requires a large annual outlay. If railroad-gardening is ever to become a potent and permanent means of public education, it must be organized upon a more ecomical basis, and with more regard to the laws of good taste and of good business than has yet been shown in the United States or in Europe.

This is a subject which has, however, occupied the attention of a few thoughtful men, and we feel confident that some progress has at last been made in railroad-gardening—a view which will perhaps be confirmed by an examination of the pictures of some of the suburban stations recently built by the Boston and Albany Railroad, which we begin to publish this week. The grounds surrounding these stations have been laid out with a view to convenience, neatness and simplicity. They contain no beds of brilliant flowers, and make no attempt at startling effects. They rely for their attractiveness upon convenient and well-kept roads, neat turf, a few good trees, and masses of well-selected and well-planted flowering shrubs among which herbaceous and bulbous plants are allowed to grow. The scheme is simple and, when thoroughly carried out in the beginning, is easy and inexpensive to maintain. And as true art, which consists in adapting any creation of this sort to its surroundings and to the requirements of every-day life, always impresses itself in the long run upon those who are brought in contact with its results, these simple station-yards are already exerting an influence which is shown, in the communities of which they are the centres, in a truer appreciation of what is most beautiful in gardening.

The best scheme for treating railroad slopes and banks has not yet been worked out. The two extremes are the carefully graded and turfed bank, generally adopted in England when railroads were first built, and the rough, gullied slope, usually bare of vegetation or covered with an occasional growth of native shrubs which do not long escape the annual butchery of the track-gang. Some system intermediate between these two extremes is needed. The turfed slope, in spite of all the money that has been expended upon it, has not been successful even in England, where the climate is much better suited to the development of good turf than in any part of the United States. The grass slopes there are now generally in a bad condition, cut with gullies, filled with weeds, and really less satisfactory

than if Nature had been left to shape and cover them according to her own devices.

At least one company in this country has expended enormous sums of money in grading and turfing its slopes, but the result, as might have been expected, is even less satisfactory than it has been in England—our hot sun and long droughts keep the turf brown through the greater part of the year, even when they do not kill it out entirely. What is needed is a covering which will be more permanent than turf, which will not require the constant cutting and attention that turf requires, and which can be secured without the excessive first expenditure for accurate grading and the deep soil that are needed to make a grass-covered slope presentable.

It has been suggested that a railroad slope covered with dwarf, hardy shrubs would be more secure and would look better than one covered with turf of the poor quality, which is all we can hope to secure in our climate in such positions. The value of this suggestion lies in the fact that such shrubs as might be used—wild Roses, dwarf Willows and Sumachs, Sweet-fern, Bayberry and several others—would, when once established, prevent the surface-soil from washing, would not grow tall enough to interfere with operating the road, and, if destroyed by fire, would grow again from the roots and soon cover the ground. There can, of course, be no doubt that a bank covered with any of these shrubs would present a more inviting and pleasant appearance to the eye of the traveler than a stretch of such turf as can be grown without great expense for annual renewals and for mowing, rolling and watering. The Boston and Albany Railroad Corporation has recently established nurseries near Boston, in which large quantities of native shrubs are now grown, with a view to testing the possibilities of covering with them the slopes in its suburban division. These experiments will be watched with much interest.

One of the important and interesting results of Mr. Pringle's botanical exploration of northern Mexico is his discovery of a vast forest of Oaks and Junipers covering the mountains of Chihuahua and extending north and south for a distance of nearly a hundred miles parallel with the lines of the Mexican Central Railroad, and in some places less than a hundred miles distant from it. When the Mexican Central Railroad was built, sawed-pine ties, cut from the mountain slopes of northern New Mexico and southern Colorado, were used; these were soon ruined by dry rot, and the company has now for some time been replacing them with Arbor-vitæ ties, cut in the swamps covered with this tree, which abound in the northern portion of the states bordering upon the great lakes. These ties cost the company $1.12 delivered in their yard at Paso del Norte, and yet there is, Mr. Pringle believes, Oak and Juniper timber enough in this great forest-belt of northern Mexico to supply all the railroads of that country with ties for many years.

A plant with which to make a lawn that will remain green during the summer, without irrigation, in a dry region like central and southern California, has long been desired. Our advice has been asked upon this subject, and we have referred the question to M. Naudin, who directs, in southern France, the garden in which are now the largest collections of dry-country plants, and who has an unrivaled knowledge of such plants. His answer is as follows:

"We have at the Villa Thuret lawns of *Bromus erectus* (a European grass) which remains green without irrigation during the long droughts of the Provence summers. These lawns, however, are less beautiful than those of "Ray Grass," which will not flourish here.

"*Achillea Millefolium* is spoken of now for this purpose. It grows freely, even in the dryest weather, and makes a handsome turf. It must be cut over, however, frequently, to prevent it from throwing up flower-stems. This plant does not succeed in soil strongly impregnated with lime, but it grows freely in poor, gravelly, arid soil. It would succeed admirably, no doubt, in California. There is a native perennial plant here which covers the most barren gravel, and which, I believe, would make an excellent lawn in dry regions. It is the *Trifolium frugiferum*. The stems and branches are prostrate, and spread over the ground. This plant is very tough and hardy, and it produces freely heads of pale, rose-colored flowers, which resemble ripe strawberries—a resemblance which is the origin of the specific name. A lawn composed of this plant would not require cutting.

"It is possible that there exists in Algeria a grass or some other plant capable of resisting drought and great heat, and suitable for making turf, but heretofore no one there has thought of this matter. I will make inquiries of my African correspondents, and perhaps we shall find just the plant we need."

A correspondent of the *Southern Lumberman*, writing from Byram, Mississippi, calls attention to the value of the wood of the Tupelo Gum (*Nyssa uniflora*) for woodenware, especially for fruit and vegetable boxes. The wood is very light, nearly white in color, and its peculiar fibre prevents it from splitting. The supply is practically inexhaustible, and as this tree grows in swamps which cannot well be cleared and drained, it will not soon be destroyed. The wood has been valued locally for a long time for bowls and other articles of domestic use; and it now seems probable that it will soon become an article of considerable commercial importance, as it combines lightness and toughness in a greater degree than any American wood existing in such large quantities.

The changes in population which are likely to result from the exhaustion of the Pine supply of the forests about the head-waters of the Mississippi River and in the region of the Great Lakes will have a serious effect on the business of the railroad and steamboat lines of the north-west. They have hitherto been largely employed in carrying lumber and other supplies for the inhabitants of an extensive region which would have remained, to a great extent, unsettled and undeveloped had it not been for the stimulus and assistance which this great timber-supply has given to business and industry of all kinds.

Not only will the quantity of lumber to be transported soon be inconsiderable, but the occupations of the people of the country will be interfered with and crippled, and there will be a marked decline in the wealth of the region. The relation of these forests to the subsistence of multitudes of people who have never seen the woods themselves, is a conspicuous illustration of the importance of forestry subjects in their economic bearings.

Recent Botanical Discoveries in China.—I.

THE flora of the far east—of China and Japan—is so totally different from that of western Europe, so much richer, especially in ornamental shrubs and trees, that from the earliest intercourse with those countries Europeans have borrowed therefrom to embellish their gardens and green-houses. Yet, with few exceptions, the introduction of Chinese element dates within a century of the present time. So far as the British Islands are concerned, the plants of eastern Asia will flourish in the southern and western parts, at least, in about 10° or 12° higher latitude than in their native homes, and in eastern North America in probably about the same latitude as at home; but on this point my information is too meagre for me to write with authority. Here in England we were not altogether without evergreen shrubs and trees, though practically limited to the Holly, Yew, Juniper and Ivy, with the color-giving heather and furze, which cover and beautify so many miles of the least productive parts of the country. Now, the dwellers in towns, especially on our southern and western coasts, are more familiar with the varieties of *Enonymus Japonicus* and *Aucuba Japonica* than they are with native shrubs. Prominent among the

numerous other hardy plants of the Chino-Japanese region it is sufficient to name the incomparable *Wistaria Sinensis, Clematis patens, Ampelopsis Veitchii* and the China Aster; among more strictly green-house plants, though they thrive out-of-doors in the milder parts of the country, the Camellia, Chrysanthemum, Primula and Azalea.

But it is not my intention to dwell upon what we already possess; rather on that portion of the flora of eastern Asia which is still known to us only from dried specimens and the necessarily imperfect descriptions of travelers. Russians, French and English have recently contributed largely to the general fund of information, and it happens that each nationality has collected for the greater part in a different region or regions, the floras of which are so diverse that few of the novelties from these different sources are the same. Collectively their explorations have led to the discovery of an enormous number of new species, and no inconsiderable number of new general types. Considering the highly ornamental character of many of the Chinese denizens of our gardens, it was not to be expected that the later discoveries would surpass in beauty, grandeur, elegance or singularity what was previously known of the flora of the Celestial Empire. Nevertheless, as I shall presently show, the existence has been revealed of many herbs, shrubs and trees that would grace the gardens of our western countries.

Mr. Maximowicz is engaged on the Russian collections of Przewalski, Piasezki, Potanin and others, but his numerous duties prevent him from making very rapid progress. M. Franchet has already published the collections made by the French Abbé, David in northern China and eastern Mongolia and Tibet, and, in part, the exceedingly rich collections made by the Abbé Delavay, chiefly in Alpine regions, in the western province of Yunnan; while to the writer has fallen the task of the final elaboration of Forbes and Hemsley's "*Index Flora Sinensis*," which appears in the *Journal of the Linnean Society* of London. The last contains an enumeration of all the plants known to grow in China proper and the contiguous islands, with references to the publications in which they are described or figured, together with their synonymy, distribution in China and extensions beyond, with descriptions of new genera and species. Since the issue of the first part of the "Index" the materials in the herbaria of the British Museum and Kew have been largely augmented, the former by the acquisition of the herbarium of the late Dr. Hance, who spent nearly forty years in China and devoted his spare time, which was very little, to the elucidation of its botany; and the Kew establishment by numerous small collections, but more especially by very large collections made by Dr. A. Henry in the central province of Hupeh, and a considerable collection from the province of Szechuen, made by the Rev. E. Faber, a German missionary.

I propose passing in brief review such new species, or new genera, as are of interest to gardeners, not forgetting older ones of merit that have not yet been brought into cultivation, and interspersing notes relating thereto by the collectors themselves.

Clematis.—About thirty species of this genus are recorded from China in the "Index," and subsequent discoveries have added ten or a dozen more; some of them are quite new, others new to China. Among the latter a pink-flowered variety of *C. montana*, a species which is specially valuable on account of its hardiness and early flowering. The Chinese variety was collected on the mountains near Ichang, and was in flower in May, so that it possesses the merits of the typical Indian form, with a variation in color. *C. Henryi* ("*Icones Plantarum*," *t.* 1819) is a very distinct new climbing species, having simple, cordate-oblong three-nerved leaves and solitary axillary flowers, with thick, waxy-white sepals about an inch long, with a little pink in the middle on the upper surface. Flowering specimens were collected in Antelope Glen, Ichang, on the 5th of February; and Dr. Henry states that the flowers were seen peeping out of the heavy snow the same winter; therefore it must be a desirable plant for introduction. A very narrow-leaved variety of *C. recta*, having white flowers, succeeded by golden, feathery carpels, looks very pretty in the dried state. Of equal interest to the new species were wild specimens of *C. florida*, from the neighborhood of Ichang, where, however, it was only found in one spot. *C. Armandi* ("*Plantæ Davidianæ*" ii., p. 2) is a tall, climbing shrub, with ternate leaves and ample terminal panicles of white, fragrant flowers about two inches in diameter.

Davidia involucrata is one of the most remarkable of the Abbé David's discoveries in the province of Moupine, Eastern Tibet. It is an elegant tree, between sixty and seventy feet high, with foliage singularly like that of a Lime-tree, and in inflorescence and floral structure so peculiar that its place in the natural system cannot be determined with certainty in the absence of more complete material. The conspicuous part of the inflorescence consists of two oblong-cordate white bracts, six inches long, nearly opposite each other, and tapering at the tips. A little above these, and terminating the stalk on which they are borne is a flower, or cluster of flowers, consisting of a pistil and numerous stamens with red anthers. Its affinity is with the *Hamamelideæ*. The late M. Decaisne, in a letter to Sir Joseph Hooker in 1871, the year after the discovery of the tree, states that he was given to understand that it was in cultivation in the nursery of A. Leroy, at Angers; but, although Leroy may have had seed, it does not appear that he succeeded in raising plants. The Abbé David, in an introductory chapter to Franchet's "*Plantæ Davidianæ*," states that it grew at an elevation between 6,000 and 7,000 feet, associated with a Cerasus bearing small red fruits, a gigantic Corylus, a Quercus, various *Laurineæ* and numerous species of Ficus of the most varied aspect. He mentions, too, that he collected good seed of several species of Rhododendron and three of Magnolia, which was lost in consequence of arriving in France during the war with Germany.

Magnolia.—Imperfect specimens were received at Paris of an arboreous species, between ninety and one hundred feet high, which bears very large white and purplish odoriferous flowers, similar to those of *M. Campbellii*, and produced in April and May; and Dr. Henry has sent specimens of two very fine species from the Patung district. They are both large trees, with huge deciduous leaves and large terminal solitary flowers, red in one species and white in the other.

Abutilon Sinense.—A very conspicuous shrub or small tree, with cordate leaves and showy yellow flowers, campanulate in shape, and from two to two and a half inches long. It inhabits mountain-woods to the northward of Nan-t'o, and attains a height of twenty feet. Should this prove hardy, it will well pay for introducing.

Decumaria Sinensis.—This is specially interesting on account of its being a member of a genus of which previously only one species was known—namely, *D. barbara*, a native of the Atlantic States of North America, from Florida to North Carolina, thus adding one more link in the chain of connections between the floras of these two widely-separated regions. Dr. Henry describes the Chinese species as a creeping shrub, hanging from the wall of the cliff in the Ichang Gorge, with beautiful clusters of fragrant white flowers. It bears a general resemblance to the American species, and is figured in the "*Icones Plantarum*," *t.* 1741.

Itea ilicifolia.—A distinct species with Holly-like (*Ilex Aquifolium*) leaves and long, narrow racemes of white flowers. Common about Ichang in rocky places on the tops and sides of cliffs. Judging from the dried specimens this is the most ornamental of the genus, which is restricted to eastern North America, the mountains of northern India and to China and Japan. Figured in the "*Icones Plantarum*," *t.* 1538.

Chimonanthus nitens.—A very well marked species of a genus previously supposed to be monotypic. From dried specimens it appears to be an evergreen, and even if not evergreen the white flowers are certainly produced with the thick shining leaves. A shrub five or six feet high, inhabiting the neighborhood of Ichang. Figured in the "*Icones Plantarum*," *t.* 1600.

Liriodendron.—We have imperfect specimens of a Tulip-tree from the Lushan Mountains, Kiukiang, from two different collectors. Whether they belong to a distinct species or to the North American species is uncertain. There is evidence of the early introduction into China of a considerable number of American useful plants, and there is always the possibility that the Tulip-tree may have been introduced. On the other hand, there appear to be differences. The Chinese Tulip-tree is described as of spreading habit, which is at variance with the upright habit of the North American tree as it grows in England; and the one flower seen is much smaller than any of the North American we have for comparison. The leaves, however, offer no distinctive character. Further information respecting the Chinese tree is awaited with great interest. It is noteworthy that no specimens of this tree have been sent in the very complete collections made by Dr. Henry.

Lonicera.—Upwards of thirty species of Honeysuckle have been detected in China, including seven or eight new ones in the later collections. Among the latter *Lonicera fuchsioides* is remarkably distinct and ornamental, reminding one much of some of the Andine species of Fuchsia, having ternated verticillate leaves and erect flowers. It was discovered by the Rev. E. Faber on Mount Omei, Szechuen, at an elevation of 5,000 feet. *L. Henryi*, from the Patung district, has terminal

clusters of small red flowers, and is most nearly allied to the Indian *L. glabrata*. *L. similis* is a slender twining shrub with elegantly formed lanceolate leaves of a pale color beneath, and slender flowers in pairs on axillary peduncles, shorter than the leaves. The name was given in allusion to the strong resemblance it exhibits in its foliage to an Indian variety of *L. macrantha*. *L. tragophyllum* is a handsome species allied to the European *L. Caprifolium* and the North American *L. sempervirens*, having even larger flowers, described as yellow. This also is from the Patung district.

Viburnum.—A genus of the same order as the Honeysuckles and almost as numerously represented in China. Seven are described as new, and two or three of them are very marked in character. *V. rhytidophyllum* has large, coarsely wrinkled leaves, densely felted beneath, and *V. Henryi* is a trailing shrub with foliage very much like that of some of the Laurocerasus section of Prunus. *V. propinquum* is nearly related to the common *V. Tinus*, though probably less attractive, as the flowers are smaller. Wild specimens of the old *V. macrocephalum* were sent by several different collectors from distant localities. In these only a few of the outer flowers are neuter.

Actinotinus Sinensis.—This is an arboreous Viburnum, with large palmately compound leaves, like a Horse-chestnut or Buckeye. It is figured in the "*Icones Plantarum*," *t.* 1740, and is without doubt one of the most striking novelties from the Patung district of Hupeh, though the flowers are not very showy. In floral structure this does not differ from the genus Viburnum, which is numerous in species spread all round the northern hemisphere and extending to the Andes in America and to Madagascar. In all these species the leaves are simple and undivided, therefore the Chinese plant was separated generically. Dr. Henry states that it inhabits the high mountains and is evergreen. Leaflets seven, petiolate, six to nine inches long, borne on a terete petiole six to ten inches long.

Ilex.—China is rich in Hollies, several new species having been sent since the part of the "Index" dealing with the genus was issued; but there is nothing among them to equal the beautiful varieties of *I. Aquifolium*. The new *I. Pernyi* ("*Icones Plantarum*," *t.* 1539) is similar to Fortune's fine introduction, *I. cornuta*, with comparatively small leaves, and Dr. Henry has sent a highly remarkable variety of *I. cornuta* with almost exactly square leaves, each angle terminating in a spine. *I. macrocarpa* ("*Icones Plantarum*," *t.* 1787) has an unusually large blackish fruit, but is not of a specially ornamental character.

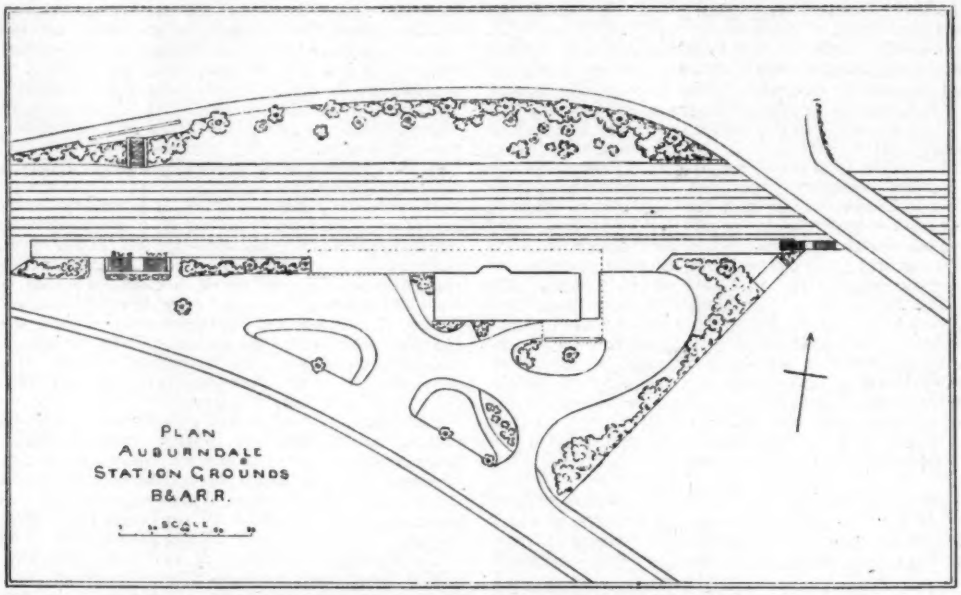
Kew, February, 1889. *W. B. Hemsley.*

"One should first seek out the natural character of the place to be changed into a park, in order to maintain this character and to draw out all its good points. This rule is but seldom observed."—*Hirschfeld, 1777.*

The Railroad-Station at Auburndale, Massachusetts.

THE station at Auburndale, near Boston, on the line of the Boston and Albany Railroad, has a peculiar interest as being the first of the series erected by the late H. H. Richardson.

It is almost needless to explain that until Richardson began to build rural railroad-stations none had been erected in America which deserved much consideration as intelligent and pleasing works of art. Among our great city termini a few existed which were reasonably appropriate to their purpose in external appearance as well as admirably planned for the convenience of trainmen and passengers. But the best of our small country stations were plain, cheap structures, looking no more like stations than like buildings of some very different kind, while the average varied between grotesque and fragile attempts at picturesqueness of aspect and shabby make-shifts disgracing the very name of architecture. We had vulgar little stations that looked like exaggerated kiosks, and brick or wooden boxes which merely displayed the railroad company's desire to expend as little money as possible; but no rural stations that gave pleasure to the passing traveler's eye, accommodated him comfortably while he was waiting for a train, or showed that an architect worthy of the name had had a hand in their erection.



Plan of Auburndale Station Grounds, Boston & Albany Railroad.

No problems, however, appealed more strongly to Richardson than those which were utilitarian in character; none delighted him more than those which had hitherto been neglected by art; and he was as eager to put his best thought into small problems as into large ones. Therefore, when the Boston and Albany Railroad Company asked him to design their station at Auburndale he showed for the first time what such a building ought to be. The plan, of course, in so small a station is very simple, there being but two waiting-rooms of almost equal size for men and women respectively. But the rooms are well proportioned and the ticket-office is well placed, projecting as a prettily designed bay upon the platform. The interior walls are wainscotted with brick, as being cheap, durable, pleasant to the eye, and easily kept clean. The woodwork is simple throughout, but, although no carving exists, it is carefully distributed and profiled and gives a look of refinement very different from the parsimonious nudity or the cheap elaborateness which the average country station

shows. Here, as well as in the architectural features proper, we feel that the hand of an artist has been at work.

Simplicity, dignity and solidity likewise characterize the exterior of the building, while its outlines and proportions are such that its true purpose could not be mistaken. A station is not a house to live in, but a house to wait in—a mere temporary shelter. The roof, therefore, not the walls, should dominate in its expression, and this prime fact Richardson never forgot, no matter what was the size of the station he was designing. The walls at Auburndale are low, and their windows are not conspicuously emphasized; but the roof is broad and massive, and the adjacent sheds are not mere adjuncts but integral parts of the building, their roofs being vitally united with its own. In a dwelling-house a more ornate chimney would have been appropriate as accenting the importance of the family fireside, but nothing could be better on a railroad-station than Richardson's simple chimney. An interesting point is the design of the wooden posts which support the sheds. Here again there is no ornament. But the plain square-sectioned posts with their massive braces, affording three points of support to the beams, admirably express the nature of the material, and the slightly curved form of the braces prevents any look of stiffness or monotony in outline. The roofs of the sheds are open, showing the timbered construction. The walls of the station are of granite, trimmed with red sandstone, and the roofs throughout are slate, with terra-cotta ridges.

But a station like this would be shorn of half its comfort and beauty were it placed and surrounded as the American country station usually is. The railroad company was as wise in asking Mr. Frederick Law Olmsted to design its grounds as in asking Richardson to build it. Whatever the art, and however small the problem, only the best talent can produce the best result. If the accompanying plan is studied for a moment its excellence will make itself plain. The high-road passes obliquely by the station and from it, towards the right, diverges the approach in an easy curve, while near the porch underneath which passengers alight is a wide space for turning, and the little lawns are so disposed towards the left as to admit of the passage of numerous vehicles without danger of over-crowding. A path-way encircles the station, and the platform may thus be approached, without entering the building, either on foot or in a carriage. Under the superintendence of Mr. E. L. Richardson, who has charge of all the horticultural concerns of the Boston and Albany Railroad, these lawns have been covered with neat turf and adorned with hardy flowering shrubs, naturally disposed yet grouped in effective masses. The boundary fence to the right is hidden by shrubbery, and masses of it are so disposed around the walls of the building that, with their luxuriant covering of Japanese Ivy (*Ampelopsis Veitchi*), they almost seem part and parcel of Nature's handiwork. In summer this effect is the most charming that can be produced in a rural situation, while even in winter the delicate tracery of the naked vines and the bare masses of the shrubs preserve it to a considerable degree. No detail better shows Mr. Olmsted's good taste than the way in which, in laying out his path, he permitted planting close to the walls.

A single tree placed by the carriage-porch—which admits to the women's waiting-room—already groups agreeably with its roof, and in future years will be still more effective, throwing its shade over the spot where the idea of shelter is most conspicuously emphasized by the lines of the building itself. A sub-way runs under the tracks to a strip of lawn on the opposite side, which has its fence "planted out" with shrubs, thus affording the traveler a pleasant, verdurous prospect whichever way he may turn his eyes.

"A mountain range should be viewed in sections, and only once in its entirety; a city should be divided in like manner, and we should avoid getting the same view repeatedly. To break up a fine prospect effectively is, however, a much more difficult matter, than to expose it completely." *Pückler-Muskau.*

Foreign Correspondence.

London Letter.

SINCE my last letter we have had a coat of snow six inches thick, which remained with us two days and was accompanied by severe frost. Then came the south-west wind, and the snow disappeared as suddenly as it came. Before the snow the weather was genial, coaxing into bloom many out-door plants, amongst them many kinds of Crocus, Snowdrop, Snowflake, *Eranthis hyemalis*, the beautiful *Anemone blanda*, *Scilla bifolia* and several kinds of Muscari. Many of the dusky Hellebores were in full flower, and the deliciously fragrant Chimonanthus was gay with flowers. Planted on a warm border against a south wall this shrub never fails to bloom freely here. Its companion, *Jasminum nudiflorum*, with its long wands of bright yellow flowers, also was in full beauty before the snow and frost came. Even now again the branches are full of newly-opened flowers and buds. The flowers of *Nuttallia cerasiformis*, which was almost in full bloom, were destroyed by the cold. In England this shrub does not fruit, whereas in France and other continental countries its large, plum-like fruits are its chief attraction. Perhaps the most pleasing of the shrubs now in flower outside is the Japanese Witch-hazel, *Hamamelis arborea*. Your native species has little floral attraction, but the two species from Japan, *H. arborea* and *H. Japonica*, are beautiful flowering shrubs. *H. arborea* is probably only a large form of *H. Japonica*, but for garden purposes the two are quite distinct. At Kew, *H. arborea* is a pyramidal shrub six feet high, with numerous branches clothed with primrose-yellow flowers, one inch across, the calyx being of a deep claret color. In Japan this species grows to a height of twenty feet. It was introduced in 1862, is perfectly hardy, and is just the plant to be used for massing in positions where its bright yellow flowers would be seen from a distance. The Hellebores (*H. orientalis* or Lenten Rose) above referred to are frequently grown in pots for the conservatory. They are wanting in brightness of color, although some improvement in this respect has been made by breeders, especially in Holland and Germany, where Hellebores receive special attention. De Graaf, of Leiden, has raised many improved kinds, and he grows them in thousands. They are as hardy as the Christmas Rose, much easier to cultivate, and if only we can get brighter and clearer colors into them they will be of immense value as winter flowers. The best I have seen are Apotheker Bogren (rose-purple), Comm. Benary (white with crimson spots), Gertrude Jekyll (pure white), Peter Barr (purple) and Colchicus coccineus (rosy purple). At Kew, large clumps of these Lenten Roses are taken up from the ground late in the autumn, planted in pots and brought into the cool-houses to flower. When the flowers are over, the plants are returned to the borders, and they do not show any signs of having suffered from the treatment. Spring Crocuses are gaily in flower whenever the weather will let them push through the soil, and the sun woo them into expanding. I counted fourteen species in bloom to-day, *C. Imperati*, with its beautiful purple feathering on a buff ground, the color inside being bright rose-purple; *C. versicolor*, variable in its colors, but all the forms attractively marked; *C. Alatavicus*, *C. Korolkowii*, the earliest yellow, *C. chrysanthus*, with several other bright yellow, and one white-flowered species were amongst them.

The meeting of the Royal Horticultural Society was to some extent spoilt by the snow and cold, which prevented intending exhibitors from bringing their plants. There was, however, a varied and attractive display, rendered still more so by the unusual appearance of things outside. The most interesting exhibit was a collection of Narcissi grown in six-inch pots, some of them bearing as many as ten flowers. For the middle of February the display was unusually good, and the plants had not that drawn, weakened appearance which early, forced Daffodils generally have, the leaves of Mr. Barr's plants being short, sturdy and full green; many of the flowers were almost as good as the best of unforced ones. Amongst the yellows I noted, as first-class kinds for forcing, Spurius, Golden Spur, Obvallaris (Tenby Daffodil), Henry Irving, Santa Maria and Maximus. These were excellent in form, clear in color, and good in substance, in fact, perfect flowers. Many people spoil their Daffodils in forcing by placing them in a close house or frame. The secret of Mr. Barr's success is the use of bottom heat, with abundant top air and a low temperature. The pots are plunged over a bed of manure in a frame with a southern aspect, and the lights are removed in favorable weather, whilst even in the coldest weather plenty of ventilation is given. This treatment induces vigorous root-action and keeps the leaves short and dark green.

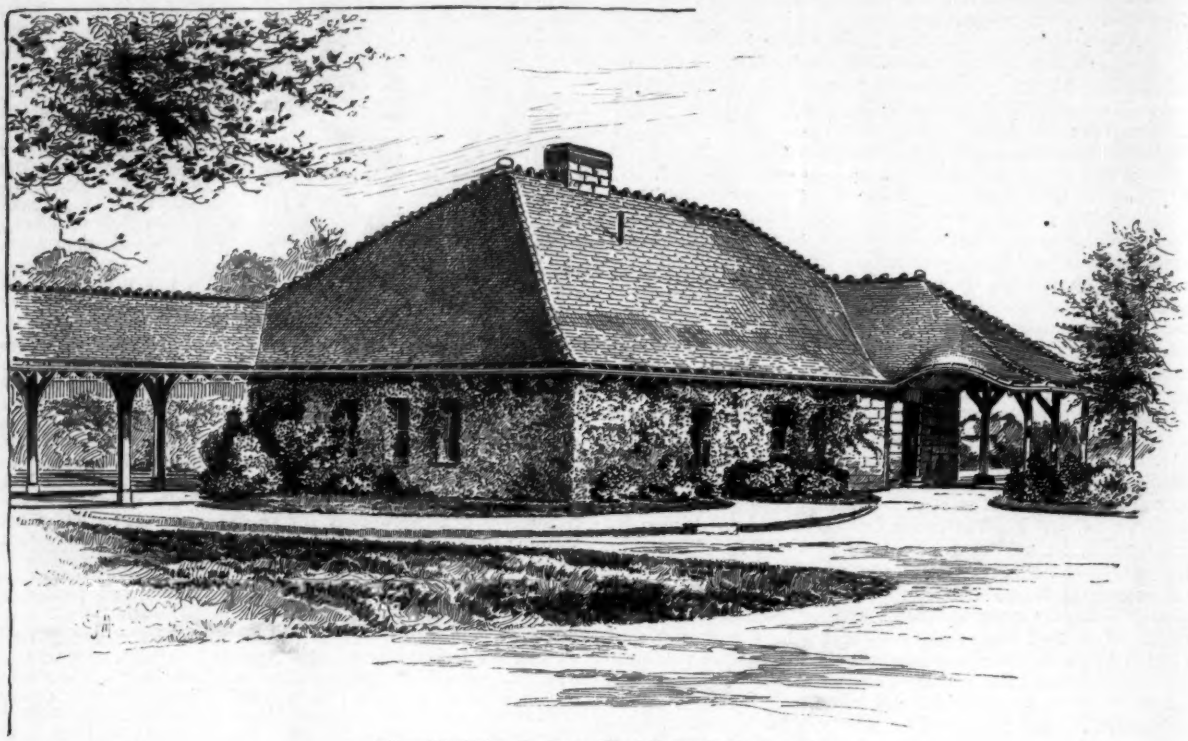
The variegated form of *Yucca filamentosa* was shown in capital condition, by means of a dozen plants in eight-inch pots, the leaves being one foot long by two inches broad, bright green, with broad marginal bands of creamy white, the characteristic curly filaments being of a pale brown color. Such plants take a long time, at least six years, to grow from small suckers, and it is difficult to keep them in health. But when grown as those exhibited were they are exceedingly handsome. They color better and keep their health better also when grown in a warm frame or greenhouse than when kept cool. Out-of-doors this variegated form succumbs to the cold and wet of our winters.

A collection of variegated Kale attracted much attention, owing to the clearness and prettiness of the colors—creamy white, with very crisp margins, and the narrowest band of emerald green; others bright purple with green edges, others magenta and green, and so on. In cool conservatories these plants might fill the place in winter which Coleuses occupy in summer. Several collections of Cyclamens were shown, all of the plants being good, although not above the average attained by London growers of these plants. Messrs. Veitch sent a collection of flowers of the Javanese Rhododendrons, which seem to be perpetually in bloom with them. They also exhibited plants of *Cypripedium Lathami*, a hybrid raised from *C. Spicerianum* and *C. villosum*. It is at least as good a plant as *C. Leeanum superbum*. Singularly enough the floral committee did not consider it worthy an award of any kind. Another hybrid called C. J. B. Haywood, the offspring of *C. Druryi* and *C. superbiens* was poor in color, in fact, one of those hybrids which ought to be destroyed as unworthy of their parents. When is selection to operate amongst the hybrid Cypripediums?

Some fine collections of Apples were exhibited by Messrs. Rivers, Bunyard and others. A collection of fruits of Oranges, Lemons, Shaddocks, etc., and a small bush covered with pale yellow fruits was exhibited under the name of Bijou Orange.

The value of grafting and budding in horticulture is being discussed in the *Garden* in such a manner as is likely to throw a good deal of light on a subject of vast importance, especially to fruit-growers. Some of the writers condemn grafting of all kinds whatsoever, one declaring that it is "jugglery," "a sham, very often a fraud, and nearly always a delusion." This is strong language, such as few practical men will indorse. There can be no question that it is worse than waste of time to graft many plants which do as well, or even better on their own roots. Roses are a case in point, few of these plants being better when grafted than when raised from cuttings, whilst many of them are much worse. It is a fact that very few of the Pome and Drupe families existing in English gardens are on their own roots. If all this proves to be wrong, we shall stand convicted of one of the biggest mistakes ever perpetrated in horticulture. That this cannot, however, be, I know from a very simple but conclusive bit of evidence no older than last October. One night toward the end of that month we had a severe frost. In a London nursery, where Peaches and Nectarines are grown in thousands, I saw many rows of low-budded, fan-shaped trees, every one of which was frost-bitten at the collar, just above the stock, whereas on the same ground not twenty yards away a bed of standard-grafted Peaches was unaffected. The difference between the temperature on the ground and six feet above is about five degrees, and the scion was unable to bear the temperature which the stock had safely weathered. To what extent is grafting practised in America? It would be easy to mention hundreds of failures attributable to grafting, more especially among Coniferæ and among many other trees and shrubs. In a great many cases it is by far the best plan to use stocks of the same kind as the scion. In a great many more it would be preferable to raise the plants direct from cuttings.

Kew, February 15th, 1889. *W. Watson.*



Auburndale Station, Boston & Albany Railroad.—See page 124.

"There is no part of improvement in which cautious operation is so necessary as in opening scenery. Injudicious planting may be remedied; but the evil resulting from injudicious removal can never be repaired, at least in the lifetime of the owner who has fallen into this common and destructive error. I was once consulted upon the improvement of a place on a large scale. The striking fault was the want of trees on the foreground connected with the house. I therefore marked several places for groups and single trees to supply this deficiency. But what was my astonishment when the owner told me he had cut down the trees that had occupied the very situation I had selected for planting."—*From Gilpin's "Practical Hints on Landscape Gardening."*

Cultural Department.

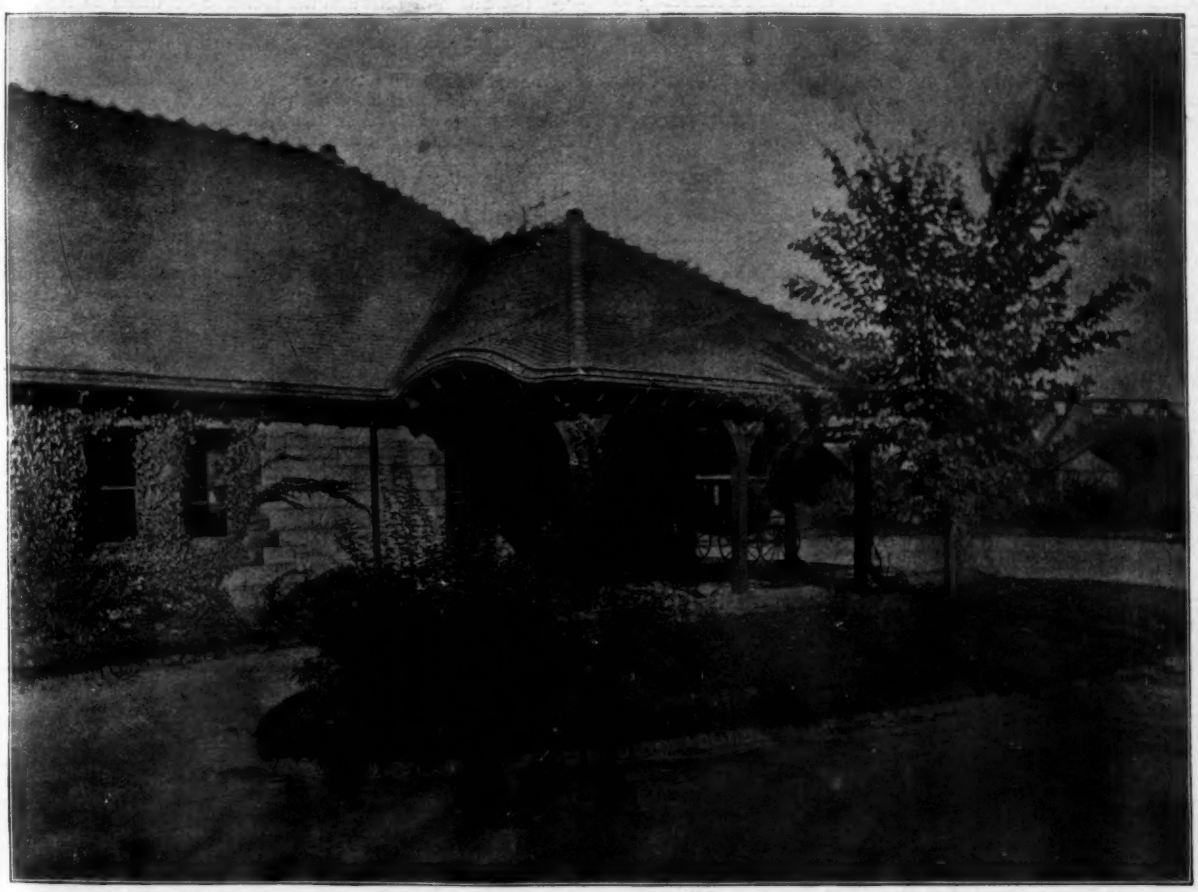
Forwarding Vegetable Plants.

YEARS ago we thought it essential to success in growing early cabbages that the seed should be sown in September and wintered over in cold-frames, or, south of Baltimore, planted out on the sides of elevated ridges. But this practice has been generally abandoned. We have found it more satisfactory to sow the seed in February, in boxes in a green-house or in a hot-bed; to transplant into other boxes as soon as the plants are large enough, and then to harden the plants in a cold-frame. Plants raised in this way are better than those from fall-sown seed, for they make a more rapid growth in spring, come in as early, and form a better crop, since they do not run to seed.

We use green-house boxes in preference to hot-beds for all kinds of plants, always taking care to get them into a cold-frame as soon as the character of the plant renders it safe to do so. This saves the trouble of preparing manure and making hot-beds, and handling, covering and airing through snow, slush and rain. The work can be comfortably attended to inside. Besides, by the use of shallow boxes not only is the irksome work of transplanting into a frame avoided, but the plants are kept in good shape for removal to the garden. A plant lifted from the box on the point of a trowel, and set with a lump of soil and manure on its roots gets a good start of one pulled from a frame.

Many amateur gardeners think when they make a hot-bed and sow tomato seed thickly therein that they are forwarding the plants for the garden. But a good, healthy plant started in the open ground a month later will surpass in vigor, earliness and productiveness the tender and bleached plants raised in a hot-bed. If a hot-bed is to be used, the seed should be sown in a small bed; a week or so later a larger bed should be prepared, and into this the young seedlings should be transplanted as soon as large enough to be handled, though for this purpose a well-prepared cold-frame is better, if not used too early. Here we sow our tomato seed in February, in green-house boxes, transplant into other boxes as soon as the plants are large enough to be handled, and then into frames for hardening by the middle of March. In the latitude of New York a month later than these dates will be the proper time. Plants thus transplanted are stout, stub-pointed and vigorous, if care is taken to expose them, after they go into the frames, to the open air whenever practicable. Such plants, set out here late in April, will give ripe fruit late in June or early in July. This practice involves more trouble, for which, however, the gain in earliness fully compensates. Egg plants and Peppers will not harden well in frames like Tomatoes, and the effort to make them do so will only result in stunted, unhealthy plants. We always pot Egg-plants and shift them, like any hot-house plant, until the weather is settled and the ground is warm—generally about the middle of May in this latitude. After this treatment, when the plants are put out, they are large and robust, and do not easily succumb to the Colorado beetle, which is fonder of them than of the Potato. A few early Cucumbers and early Musk-melons, treated in the same manner as the Egg-plants, will do well and give an early crop. Seeds of these very tender plants should not be sown even here before March, and a month later at the North. While the cold-frame is waiting for the tender plants some seed of early scarlet Turnip-radish may be sown in it. These, with care, will be out of the way by the time it is safe to trust the Tomato plants in the frames. Of course, during the fall and winter, the frames are kept at work with Lettuce and Cauliflower. The Lettuce being cut out, the Cauliflowers can be left without the glass when the time comes to sow Radishes in March, and with an extra frame the same sashes that grew the Lettuce and Cauliflower may be used for the Radishes and for hardening the Tomato plants. Few amateur gardeners understand the full capability of an ordinary cold-frame. A few sashes can be kept profitably at work on frames from November to June or later.

Crozet, Va. *W. F. Massey.*



Auburndale Station, Boston & Albany Railroad.—See page 124.

White Sports among Roses.

THESE peculiar developments or accidental growths, discovered from time to time among our Roses, are of a most interesting character, and they have either become more frequent of late years, or they have been more closely observed and cared for. In any case, the list of such variations has been much extended within recent years.

Botanical authorities have expressed the opinion that white variations, or albinos, as they are sometimes termed, may be expected among all colored flowers, and that, consequently, it is not surprising that they should be found among Roses. Up to the present time it is believed, however, that white sports have appeared only on the pink varieties, and have been most numerous in the Tea class. Some varieties appear to have a greater tendency in that direction than others. Souvenir d'un Ami, for instance, produced white sports, both in England and in the United States, at nearly the same time. As far as can be judged from descriptions the flowers of the two sports seem to be very similar, though there has probably not yet been a comparative trial of the respective merits of The Queen, the American sport, and Souvenir de S. A. Prince, the English variation.

Both the above-named sports have been much lauded, but it is rather premature to express a decided opinion on their merits, either for bedding-out or for forcing, though their origin is good, the parent having been a very popular variety for several years.

Another instance of a sport appearing in duplicate was that of The Bride, whose parent, Catherine Mermet, produced a white flower at nearly the same period in two different establishments, though one of these sports exhibited a tendency to a pink tinge in the centre of the flower.

So slight a difference as this, however, might easily be caused by a different soil or some peculiarity in treatment.

Another addition to the list of white sports, of comparatively recent introduction, is the White Bon Silene, the origin of which is clearly indicated by its name, the flowers being similar in size and shape to the type, but pearly white in color.

It seems somewhat strange, however, that after preserving its original characteristics for over forty years, the Bon Silene should, in 1883, produce a white sport.

In the hybrid perpetual class white sports have not been of so frequent occurrence, though the cause of this has not been explained unless it be that a majority of Roses of this class are of stronger growth and more vigorous constitution than the Teas, and therefore may not be so likely to produce sports of the character indicated. The absence of color may be due to some inherent weakness of the plant, on the same principle by which the white variegation of the leaves of plants has been accounted for.

The most notable instance of albino development among the hybrid perpetuals is that of the White Baroness Rothschild, which was introduced in 1882 by Paul. It is much like the type in growth and general appearance, and though a lovely Rose when in perfection, yet, like its parent, it does not flower very freely.

Holmesburg, Pa. *W. H. Taplin.*

Orchid Notes.

Cattleya Percivaliana.—When some six years ago this grand Cattleya developed its handsome blossoms in our collection, there was much discussion as to whether or not it was an inferior variety of that Prince among Cattleyas, *C. Mossiæ*. After a season's growth, however, the plant proved to be entirely distinct, of most easy culture and worthy to rank among the foremost of this noble genus. It is a winter-flowering Cattleya, enriching our houses with its lovely blossoms when Orchid bloom is always acceptable. Four and five large flowers are produced on a single stem of a rich and charming rose color, the labellum being bold and very beautifully marked with deep, velvety purple, and finely fringed. For cutting and decorating purposes it will be found a valuable acquisition, remaining in bloom on the plant for four and five weeks. Varieties of this Orchid are many, and among the numerous plants now cultivated, several white forms have appeared which are still (like most white-flowered Cattleyas) extremely rare. During the summer months this species is in active growth, and an abundant supply of air and moisture will then be found necessary to insure good results, but the direct rays of the burning sun must be carefully avoided.

Dendrobium thyrsiflorum.—A group of this Dendrobium when in bloom is truly a magnificent sight, and when arranged with ferns and foliage plants its beauty is enhanced. It makes a splendid object for exhibition purposes, its lovely racemes of white and orange flowers are strikingly effective. Its culture is quite easy, producing blossoms in great profusion during April and May, which will remain in good condition three and four weeks if kept in a cool and dry atmosphere while growing. The plants should be so placed that abundance of light and air is available, and during bright weather occasional syringings overhead will prove very beneficial until growth is completed. It will then be necessary to remove them to a cooler situation so that the bulbs may mature thoroughly before they bloom. They should be left in these quarters until the flowering nodes at the apex of the bulbs show signs of swelling, when they may be returned to their former position to enable the handsome racemes to develop. Pots or baskets will suit this species, with very little compost about the roots. During January and February the home of this Dendrobium is thoroughly searched by collectors, who ship large quantities to this country. Plants can thus be obtained at a low price. Rarely, however, are such masses received as are frequently developed under cultivation. Out of an importation of several thousand plants it is unusual to obtain a score of good-sized specimens. Large plants of this species still remain rare, therefore, and somewhat difficult to procure. *A. Dimmock.*

Summit, N. J.

Principles of Physiological Botany as Applied to Horticulture and Forestry.

XI.—The Phenomena of Growth.

ALL growth in the vegetable kingdom depends on the multiplication of cells and the increase of these in size. It is hard to realize that the organs of the plant with their orderly arrangement and their beauty of form are dependent on the increase in number and size of the microscopic masses of living matter which we have examined in a previous paper of this series. In the cells of the plant the living matter exists as a comparatively shapeless mass of a soft and yielding substance, and yet this formless matter has given shape to the shell, if we may call it so, in which it is confined.

Moreover, these shells, or cell-walls, are of extremely diversified form and character. Hence it is still more difficult to understand in what way these formless masses can, in one case, give one shape, and in another, another shape to a cell-wall, always with such precision that the sum of these creations appears before us as a plant so definite in the unity of all its parts that we think of the whole as an individual and speak of it as such. Furthermore, each plant has its own shape, and the various species are recognized as such, even small deviations from the standard or type being detected by the observer. And yet all of these multiform structures spring from microscopic masses of a formless substance.

This statement, although correct in the main, may be somewhat misleading without further explanation. It is only at the earliest period of growth of new cells that this control over the shape of the imprisoning walls can be exercised. During this early period the living matter determines in all respects the architecture of its prison. Later, the hardening walls are no longer plastic, and, then, in the interior of the cavity, the living matter seems to lie helpless and shapeless except so far as it conforms to the shape of the firm walls around.

Formation of New Cells.—In the living matter of a young cell capable of multiplication there exists a roundish body, somewhat firmer in its consistence than the rest of the protoplasm. This body is known as the *nucleus*. When a cell is about to produce another, by the process termed multiplication (or, by a strange use of language, division), this nucleus undergoes certain changes in its internal structure. The word structure is used advisedly, for, although under high powers of ordinary compound microscopes, it may appear structureless, yet, with the very best modern lenses and with appliances for staining the nucleus, a tangled network can be plainly discerned, which sooner or later assumes definite lines resembling in no slight degree the lines of a map of the earth, with its meridians of longitude and its parallels of latitude. At a certain period in the development there is an accumulation of masses at the two poles, and a sort of an equator can be made out without much difficulty. These accumulations at the poles and the equator characterize the distinct separation of the nucleus into two parts, each of which becomes a new nucleus, each one in its turn to become the seat of similar activities and changes.

The nucleus is believed to have much to do with the distribution of nutritive matters in the forming cells, but exactly how it governs the arrangement of building material is as yet

unknown. It is enough to say that the division of the nucleus accompanies the multiplication of cells. Just here it is well to glance at the wonderful character of a process by which these nuclei give rise to new nuclei and their enclosing cells, and the latter in their turn give rise to others, and so on, the new ones assuming shapes unlike the earlier ones as the growth proceeds. The cells of the Maple produce in their multiplication the leaves, branches, flowers and fruit of the Maple, each new organ appearing at its proper time and place, while the similar cells of the Oak give us all the organs of the Oak. Yet between the early cells of the two, it would be hard to find any differences by which they might be distinguished. The cells of the one have inherited from their ancestry one set of characters, namely, those of the Maple, while those of the other have come down to us from an ancestry of Oaks.

Formation of Tissues.—The cells constitute tissues, or coherent clusters of cells more or less modified, and the coherent tissues make up, of course, the masses which we recognize as the organs of the plant. In their young state the cells which constitute these tissues may appear to be almost indistinguishable from each other in form and other characters, and the tissues may very closely resemble each other. As the tissues become older, the newly-formed cells increase in size, and the nature of the constituent walls may become modified. But these new cells of the tissues do not all change in the same way. Those of the interior of a stem in its youngest state are more or less compressed or hemmed in by the cells outside of them, and thus arise what are called *tensions:* the outer portions of a group pressing more or less on the parts within. Now, since all of these tissues are more or less yielding, it is plain that any force exerted on one side of a very young organ would change its tension, and there would be a resultant change of form. Such changes of form do take place, not only from external influences, but by internal forces and the resultant changes of form may go on with a good degree of rapidity. The various movements of plants are to be referred to this cause. The external influences exerted by the force of gravity, by light, by heat, by excess of moisture, or by shock, all result in changes of form of the tissues and the organs which they compose. Exactly what is the cause of the fluctuations in the internal forces is as yet unknown, although in many cases there is plainly a direct relation between changes in the osmotic force and the changes in form.

Movements.—It may be said, in concluding this brief reference to the growth of tissues, that all young parts of all plants are capable of spontaneous movement. In a few cases, notably those of the twiners, like the Morning Glory and the Hop, the movement can continue even after the parts have grown somewhat older, and in many instances there are movements, attributable to differences in the tension of tissues, which are distinctly associated with the relations of leaves and the parts of flowers to light, moisture, and heat.*

Respiration.—The chemical phenomena which accompany the growth of tissues can be passed over very lightly. There is, of course, an expenditure of building material and a slight consumption of oxidizable matter by which latter is procured the force requisite to put the former in its place. The consumption of this oxidizable matter (sugar or its equivalent) is practically a process of oxidation, and consequently there is a production and elimination of the two products—namely, carbon dioxide and water.

In all growth there is more or less heat evolved. This physical phenomenon can best be studied in such cases as the so-called Calla Lily, in the scroll of which, during the maturing of the flowers, there is an appreciable elevation of temperature.

This series of processes during the various phases of growth constitutes, when taken together with the oxidations necessary for other activities in the plant, what is called the *respiration.* Carbon dioxide is given off, but the amount exhaled from a plant even during its period of most rapid growth is very small indeed, and, so far as hygiene is concerned it may be disregarded in the air of our houses. There are, however, processes of oxidation which sometimes occur in the rich soil in which house-plants are grown which render it doubtful whether it is not better to exclude such flower-pots from the sick-room. Furthermore, when a plant is in full flower the amount of carbon dioxide given off is larger than at other times, and there are odors evolved by flowers which may prove annoying to the sick. But on the air of the rooms in which healthy people are living the respiration of plants cannot exert any deleterious influence.†

Cambridge, Mass. *George Lincoln Goodale.*

* See Bessey's Botany, page 193.

† Many interesting facts relating to this subject are presented in a popular manner by Dr. Andus in his House Plants as Sanitary Agents.

Correspondence.

The Drayton Garden.

To the Editor of Garden and Forest:

Sir.—Magnolia-on-the-Ashley is little more than a dozen miles from the city of Charleston, and it has been in the possession of the Drayton family since 1671. Many of the Live Oaks, which were great trees then, still shade the lawns and walks of this garden, and it is full two centuries since the lines of stately Magnolias which rival the Oaks in massiveness and dignity were planted. Early in the history of the place the grounds were laid out with a broad, Oak-bordered meadow in front of the mansion, with another spacious lawn on the river side, and the stream which here drops into the Ashley was expanded into a pair of quiet lakes by two massive dams. Then more Oaks and Magnolias were planted, with some flowering shrubs and herbs, and the paths were bordered with Box. But the minor details of the plan were neglected after a time, while the trees, whose roots found the best of nourishment in the phosphate beds which underlie this whole region, kept on making marvellous growth. In 1841, when the present proprietor, the Reverend J. G. Drayton, D.D.—then a young man with health, to all appearance, shattered beyond hope—returned to the home of his ancestors, he found the great trees, and besides them only some dimly outlined walks, a few specimens of Gardenia, Calycanthus, *Illicium anisatum* and some wild shrubs on the border. The young student began his gardening and the life in the open air, which offered the one slender chance for recovery, by planting two Rose bushes. He knew little about plants then and less about work, but since that day his own hands have done most of the planting which has made his garden famous the world over, in some of its features.

It was six or seven years before Dr. Drayton found he had a chance for life, and in 1848 he planted the first Camellias and Azaleas of his remarkable collection, in which they are now counted by the hundred. Of Camellias there are some 300 varieties, many of them seedlings of his own raising. The plants, too, are remarkably large, strong and floriferous. Many specimens are trees more than twenty-five feet high, with trunks thirty inches and more in circumference, and now carrying thousands of flowers, The Azaleas are quite as numerous, and equally remarkable for variety, vigor and size. There are probably 150 distinct kinds, with individual specimens from ten to fifteen feet high and fifteen to twenty feet in diameter. Of course there are other noteworthy trees and shrubs in the garden. So fine an example of *Thuya gigantea* can hardly be found on this side of the continent, and there is a *Cupressus funebris* worth a journey to see, with immense specimens of Box Tree, and Rhododendrons, Kalmias and flowering shrubs in abundance. But after all, to northern eyes, the Camellias and Azaleas are the glory of the garden in early spring. From this part of the coast region all, who can, escape in summer to the highlands of the interior. Dr. Drayton leaves for his summer home in North Carolina as early as the first of May, but the Azaleas are in bloom a month before, and the wealth of glowing color along the avenues and on the borders of the lawn, where these shrubs are massed, can hardly be imagined, while the Cherokee Roses are flinging out their white banners from the very tops of the forest trees on the lake shore and covering them all over with flowers, and the Magnolias fill the air with fragrance.

While the Azaleas are in flower there seems no room for anything else, but a month or six weeks earlier the Camellias appear to fill the garden. Last year they were at their best a fortnight before the great snowstorm fell upon New York, and certainly they never can be more beautiful than they are today, and have been for a week past. Numbers and measurements give no idea of the dazzling abundance of flowers among the bright green leaves on the long lines of Camellias that stretch away in every direction, flowers single and double, and showing every tint from snowy-white to almost crimson. Glimpses of the shining river are caught through vistas of flowers, and under the moss-draped branches of the Oaks. The bright colors are all heightened by the dark masses of Magnolia that rise behind them. On the lawn the turf is beginning to warm into a tender green, and sheep are nibbling in the meadow, already at their work of keeping it closely cropped. And all this just at the close of February. No wonder the place is so attractive to visitors from the cold North, and no wonder so many of them feel a debt of gratitude to Dr. Drayton for throwing open all this beauty to be enjoyed by strangers.

Charleston, S. C., March 2d. *S.*

The American Pomological Society.—II.

The Meeting at Ocala, Florida.

THE late meeting of the American Pomological Society was held in Ocala in accordance with the invitation of the Florida Horticultural Society, and the northern visitors were impressed by the energy and intelligence shown by the members of this organization. It was natural that a large percentage of the papers should have been contributed by them and that they should have conducted most of the discussions. But the uniform excellence of the addresses was noteworthy. Nearly two hundred members of the local society were present, and their activity suggested the thought that the large percentage of the population engaged in fruit-culture helped to insure a more general familiarity with the methods which command success than can be found in regions where fruit-culture is subordinate to other branches of horticulture and agriculture. A large proportion of Florida Orange-growers came from a climate where this fruit does not flourish. The industry was new to them. There was no body of doctrine or experience to draw upon. The local society therefore, has been of signal advantage in furnishing a medium for the interchange of instruction and experience and the result is that, while there remains much to learn, the growing of semi-tropical fruits in Florida has already been placed on a foundation as secure as that of other branches of economical horticulture.

President Berckmans, in his opening address, said that the Pomological Society was founded fifty years ago, not only to unite the fruit-growers of the country in a brotherhood and furnish a means of social intercourse among them, but to be of practical utility in collecting and classifying the knowledge of different fruits gained in widely-separated localities. It had not been conducted in the interest of individuals, but was an impartial tribunal, setting its seal of approval on what had been proved good in practice and condemning what was unworthy; and since fruit-growing had become so important a factor in the production of national wealth the work of the Society could be truly characterized as patriotic. It had long been recognized in Europe as the most efficient organization of the kind in existence, and it was especially useful in this country where the fruit-grower owns the land he tills and where he can apply the mental force acquired in free schools to the conduct of a business which is under his own control and in which his planted orchards and other improvements will help to increase the value of property which he possesses in fee simple.

Mr. Berckmans then called attention to the Paris Exposition, and congratulated the Society that our government had established a Division of pomology in the Department of Agriculture, and that this Division was to be represented in the general exhibit made by the government at Paris. He invited attention to the progress made in utilizing surplus fruit, because this furnished a relief to the grower at times when over-production was threatened. He urged the importance of co-operating with the experiment stations with a view to making them more effective in general, and especially for the purpose of directing their efforts towards the testing of new varieties of fruit and devising means to make successful defence against plant diseases and destructive insects.

Mr. Berckmans concluded with a brief sketch of four members of the Society who had died during the year. These were Wm. Parry, of New Jersey, well known as an originator of small fruits, and more particularly identified with the introduction of the Kieffer pear; Richard Peters, of Atlanta, Georgia, a widely-known raiser of fine stock and fine fruit and the disseminator of many good varieties of native apples and peaches; A. J. Caywood, of Marlboro', New York, to whom we are indebted for several choice varieties of grapes and raspberries, and P. W. Reasoner, of Manatee, Florida, a young horticulturist of remarkable promise.

The attendance from the North was not so large as had been expected, but twenty-two states and the Dominion of Canada were represented, and among those who came and took an active part in the proceedings were such men as C. L. Watrous and G. B. Brackett, of Iowa; Geo. W. Campbell, of Iowa; Thomas Meehan, Jr., of Pennsylvania; F. L. Hexamer, of New York; E. Williams and J. R. Parry, of New Jersey; B. G. Smith, W. C. Strong and F. L. Temple, of Massachusetts.

The following are abstracts of some of the more important papers read at the meeting:

REPORT OF THE SUB-TROPICAL FRUIT COMMITTEE.

The committee on sub-tropical fruits which was created at the Boston meeting of the Society proved its value by presenting a report which gave a better account of the history and importance of this strictly southern industry than can be found elsewhere in the same compass. Unfortunately the report of the California member or the committee did not reach Ocala in time for the meeting, but the Gulf region, from Louisiana to Florida, was very thoroughly covered.

In Louisiana the Parish of Lower Placquemines has the advantage of furnishing the earliest oranges. The entire crop is sold on the trees, and the oranges are often paid for while the trees are yet in bloom. The prospective crop of a hundred-acre Orange-grove was sold last winter for $30,000 before a blossom or bud had appeared on the trees. In southern Alabama the hopes of Orange-growers were frozen out with the death of the trees in the cold January of 1886, but the Fig is here grown to perfection and yields enormously. No other strictly sub-tropical fruits are grown here, but, as in the northern region of Florida, fruits of Oriental origin like the Kelsey and Bhotan Blood Plums, the Peen-to and Honey peaches, the Le Conte and Keiffer pears, are receiving much attention. There is a reviving interest, too, in some old and almost extinct varieties of the Peach, while the cultivation of the Scuppernong Grape and of the Pecan is rapidly growing in commercial importance.

In the Florida Peninsula proper, and down to the 28th degree of latitude, the cultivation of the Citrus fruits is the absorbing industry. The trees here grow like weeds, attaining the largest size and most perfect development. Every known variety of Orange seems at home here, and many of the introduced kinds attain a sprightliness of flavor, combined with a juiciness and sweetness, which they never acquire in their original habitat. It is but reasonable to expect that in countries where these fruits have been cultivated for centuries, varieties of the finest texture and flavor may be looked for; and enterprising Floridians are collecting and experimenting with the best Oranges wherever they can be found. On the other hand, many persons hold that the best fruits can be had by selecting choice seedlings at home, which unite good quality with great productiveness. Many of the best-known groves in the Indian River region are from Florida seedlings, and even the famous Navel trees, on account of their unfruitfulness, have in some cases been budded with so-called native varieties.

The Lemon is more tender than the Orange, but the freezing weather, three years ago, did not cause irreparable loss in the southern counties, and largely increased areas are planted with this fruit every year.

Many persons consider it the most promising for cultivation of all the Orange family. Florida lemons were quite unsaleable a few years ago, but now, since more has been learnt of varieties and of proper methods of curing and harvesting, they lead the market in value.

The Pomelo, or Grape-fruit, has conquered a position for itself in the North, and must soon be as popular in the market as it always has been for home use. Its beauty and size and flavor must make it saleable, and its productiveness will make it profitable. It varies greatly, and new and improved varieties will certainly be produced.

The best varieties of the Lime have been so lately introduced that little is yet known of their commercial value. Besides these many minor fruits of this family have been introduced and are sparingly used in a domestic way, like the Citron, the Shaddock and the Kumquat, a diminutive Japan Orange of great value for preserving.

The Fig has already been mentioned, but it thrives best north of the Orange-belt. The Loquat, or Japan Medlar, is seen growing over all the State, and has proved profitable where planted for market. It is susceptible of great improvement, and the better varieties can be grafted on seedlings or on Quince roots, as is done in California. The Kaki, or Japan

Persimmon, is a comparatively recent introduction. Some of its varieties are so rich in color that they may be fairly termed gorgeous, and in flavor it bears as high a rank as it does in appearance. No doubt its introduction marks an era in the history of fruit-growing in the State, for its culture is no longer an experiment. Still, comparatively little is known as yet of its distinct varieties or their special uses. One of their most interesting fields of experiment now offered to horticulture is the hybridizing of the Kaki and the American Persimmon. In the Orange-belt the hardier varieties of the Guava, the Olive, the Date, the Carob, the Downy Myrtle, the Chinese Litchi and other fruits have been successfully grown, while south of this region the Custard-Apple, the Tamarind, the Tropical Almond (*Terminalia Catappa*), the Pineapple, the Hog Plum (*Spondia*), the Barbadoes Gooseberry (*Pereskea aculeata*), the Star Apple (*Chrysophyllum Cainito*), the Mango, together with the Banana and Cocoanut, are all in cultivation, and described with some detail in the report.

VARIETIES OF THE SWEET ORANGE.

Mr. E. H. Hart, whose Orange grove at Federal Point is famous for its extent as well as for the number of the tested varieties it contains, read a paper on the above subject. Mr. Hart, with much humor, explained how the original belief that there was but one kind of sweet Orange, all variations being accidental and temporary, had been swept away by the advent of new varieties and of the hundred seedlings, which were quite distinct to the educated eye and palate. The late P.W. Reasoner compiled a list of more than 150 varieties. All the worthy ones were not included in this catalogue, but it could have been reduced if some admitted as distinct varieties had been placed where they really belonged among the synonyms. It is not difficult to judge the quality of a variety, but it requires time to sift from the list those that prove shy bearers, those with fruit too delicate for transportation or those with other faults which detract from their profitableness. Again, fashion is fickle, and the variety which sells well this year may not be in demand the next. Who would have thought a few years ago, when Mandarins and Tangerines were eagerly sought at fifteen dollars a box, that the time was not far away when they would melt down on the hands of the commission merchant for want of purchasers, or be left to hang on the trees to rot like sour oranges? The speaker went on to say that out of the infinite variety of apples known to pomologists, the standard market sorts could be counted on the ten fingers. Even on the amateur's list, no orange should be admitted without a rigorous examination. And the market varieties should be selected still more closely.

We have only space to add condensed descriptions of a few varieties of special merit. The Maltese Blood is a favorite variety of the Blood Orange. Its thin, tough, juice-preserving skin gives it a high rank as a shipping fruit, and its tendency to bear only on alternate seasons may be corrected by liberal cultivation and fertilizing. Several strains of this variety show slight differences, and one of the best for flavor, heavy-bearing and long-keeping is possibly a case of bud variation from the Jaffa, in which the red color has become fixed. The Jaffa, as well as the Long of Thomas River, gives evidence by peculiarities in the young foliage of remote connection with the Maltese Blood, and this explains, perhaps, the crimson pulp in the case above cited. Another type of Blood Oranges has the shape and characteristics of the ordinary round orange, with the addition of the tinted pulp. Some are sharply acid and others have an exquisite sprightliness, and many of the trees show a vigor and fruitfulness which, when elaborated by selection and judicious crossing, promise a race of which Florida may be proud. The Centennial, though ripe enough for use in October and November, possesses the exceptional advantage of preserving its juices unimpaired on the tree until May or June. Of very late varieties Hart's Tardiff takes the lead for quality and long-keeping, being in season from March till August, and growing sweeter all the while. To judge from market quotations the Navel family stands high in popular estimation, but a non-productive habit has caused growers to look upon it with suspicion. The unfruitfulness has been attributed to deficient pollen, but perhaps too profuse blooming, as in the Maltese Oval, may cause a shedding of the young fruit from temporary exhaustion. But when the vigor of a mature Navel tree has been sustained by liberal feeding or by budding on the stronger-growing Rough Lemon, there has been less cause for complaint. The Washington Navel now stands without a peer even in this royal family. It often surpasses the Pomelo in size, is finer-grained, solid to the very centre, and sweet and succulent as a Strawberry Pine. Of the Double Imperial Navel lately procured from Mayor Rountree, of New Orleans, it is too early to speak. From the few specimens grown in Florida it seems of moderate size, very solid, fine grained and heavy, entirely seedless and of an exquisite vinous flavor. A thorny tree of vigorous growth and a somewhat different style of blooming from its relative, it seems like a new departure in the family, which may by its productiveness fulfill the promise of its abundant bloom. The apical mark is less prominent than in some other members of the family and often blind, but dissection always shows the orange within the orange. It is a true Navel, and only lacks the guarantee of fruitfulness to insure it a front rank among the choice oranges of Florida.

THE LEMON IN FLORIDA.

From an elaborate paper on this subject by H. S. Kedney, of Winter Park, we make space for a brief abstract only. Less is known of the Lemon and its cultivation than of the Orange, but although it demands more care and closer attention, the prevailing belief is that south of the region of danger from frost it will prove at last the more profitable fruit of the two. Fifteen years ago the finer varieties of lemon were introduced into Florida by General H. S. Sanford, to whom, and to Reverend Lyman Phelps, Lemon-growers owe a debt of gratitude for directing attention to the choicer kinds, and for setting the first example of a successful handling of this fruit. The Lemon should be budded on Orange stock, and as it needs more water than the Orange, high and dry locations should be shunned, and yet no water must be left standing about the roots. The trees should be planted much more closely than Oranges, since the dense shade preserves moisture and seems distasteful to the rust fungus. For obvious reasons heavy timber on the north and west of a grove will be found useful. Each Lemon-tree, if well cared for, should yield half a box of fruit the fifth year after setting, and in the tenth or twelfth year from six to eight boxes, which may be set down as a fair average yield. There are usually two crops a year, the first ripening in July and August, and the other in October and November. The Lemon-tree is much freer from diseases and insect pests than the Orange; it is rarely troubled with blight, "die-back," or scale. The rust-mite is its greatest enemy, and although a russet Lemon is quite as good as any other, it is unsalable—while a russet Orange is marketable.

Exhibitions.

The Recent Orchid Exhibition in this City.

THE Orchid Show recently organized at the Eden Musée by Messrs. Siebrecht & Wadley surpassed in interest either of its predecessors. As we remember them, neither was so rich in beautiful or curious plants, or so attractively arranged. The public appreciated its opportunity. Although the exhibition was open for a full week it was constantly crowded, and the number of catalogues sold proved that a genuine desire was felt to learn something about its contents. Of course at a show of this kind Orchids do not appear to the highest advantage. There are only two conditions under which they are seen at their best—either as isolated specimens or harmoniously massed, many individuals of similar kinds together. The very qualities which make Orchids attractive—their peculiar manners of growth and the vivid colors and eccentric forms of their flowers—give a confused, heterogeneous look to a general collection. The contrasts are so strong in such a collection that no one plant shows its true beauty, while the total effect is often unpleasing. Yet, anyone who made the effort to isolate one plant from another and study its peculiarities, had much to enjoy in this exhibition.

Messrs. Siebrecht & Wadley themselves contributed 176 Orchids, as well as numerous other rare or beautiful plants; Messrs. Pitcher & Manda sent seventy-nine varieties of Cypripediums and various other specimens; Mr. William S. Kimball, of Rochester—one of the chief amateur cultivators in the United States—contributed seventy-four specimens, and Mr. John Eyerman, of Easton, Pennsylvania, fifty-six, while from Mr. Man, of Weehawken, New Jersey, came fifty varieties of *Cattleya Trianæ* alone. In this last collection was a white specimen that was labelled as "the largest in existence"—a splendid plant indeed, with seven flower-stalks and thirteen blossoms.

A large shelf filled with plants of *Primula obconica* may well have convinced all visitors that no "Chinese Primrose" is so beautiful as this. The fine specimens of *Strelitzia Reginæ*—the "Bird of Paradise flower"—seemed, as is always the case when they are exhibited, to attract more attention than any of the Orchids. This is one of the showiest flowers in the world; and, whatever may be the case under other conditions, showiness

rather than beauty is what "takes" at a flower show. The thirteen varieties of Pitcher plants exhibited by Messrs. Siebrecht & Wadley, were likewise an attraction; but the most beautiful object in the room was a well-grown *Bougainvillia spectabilis*, trained on a large, fan-shaped screen, which it entirely covered with its masses of soft yet vivid crimson.

It is unfortunate that there is no good hall in New York for horticultural exhibitions. There is little choice except between the dark and gloomy hall of the Masonic Temple and the Eden Musée, which is well lighted but otherwise unfit for the purpose. It is not nearly large enough, and one is distressed to see beautiful plants crowded in among hideous mural decorations and equally hideous statues, and forming a mere adjunct to a collection of wax-works. The public has certainly shown that it takes a great interest in horticultural shows. Even the Metropolitan Museum has been crowded to suffocation when put to this service, and the smallest collection, well selected and attractively arranged, would be sure to be popular. Let us hope that a suitable horticultural hall will be provided when the Madison Square Gardens are reconstructed. But meanwhile the public owes a debt of gratitude to the enterprising firm of florists who have done so much, under difficulties, to show how the culture of Orchids has advanced in America.

Notes.

A novelty in the commercial world is the "Chamber of Commerce for Horticulture," which was recently established in Brussels. Its members will meet twice a month to transact business, after the manner of exchanges in other branches of industry.

The Tulip was introduced into Europe from Persia, passing by way of Constantinople. Johann Heinrich Hawart, of Augsburg, whose garden was famous in its day for the many rare exotics it contained, may first have brought it to Germany about the middle of the sixteenth century, and it appeared in England some fifty years later, during the reign of Queen Elizabeth.

An interesting plantation of fruit trees is about to be destroyed in the *Jardin des Plantes*, at Paris, in order that the space occupied by the menagerie may be extended. This is the collection of Pear trees which Decaisne studied when preparing his famous work, "*Le Jardin Fruitier du Museum.*" It contains about 550 varieties of Pears and forty-five varieties of Plums. Similar collections of Apple and Cherry trees formerly stood near by, but were destroyed in 1883.

In addition to the ordinary culinary uses of the Potato—which are much more numerous in France than in this country—there are many other services to which this esculent is put. In Germany spirits are made from it, and exported under the name of "Stettin brandy," while a large proportion even of the French cognac, which is fondly supposed to be the juice of the Grape, is in fact spirits of Potato. *Eau de Cologne* is likewise largely manufactured from Potatoes, while after the farina has been extracted from them, the pulp that remains is manufactured into picture-frames, boxes and toys, and the water expressed in the process is a valuable scouring fluid.

On the Castle Huntley estate, in England, a remarkable tree was destroyed by a severe gale which occurred on February 3d. This was an old Scotch Fir which, says the *Gardener's Chronicle*, was believed to be over 250 years of age and was "in some respects as remarkable a tree of the kind as could be found in the country. Its girth at the ground was twenty-four feet. At one foot up it girthed sixteen feet, and at five feet, fifteen feet. Above this the trunk swelled out until it had a girth of about thirty feet, and, although its limbs had been sadly broken and shattered by the storms of centuries, it had at the time of its fall a fairly good head. It was broken almost clean across about twelve inches from the ground, and the trunk internally was very much decayed to within an inch or two of the bark. The tree, had it been in sound condition, would, it was estimated, have yielded ten tons of timber.

The cottage at Fordham, which was once occupied by Edgar Allen Poe, has been offered by its owner, Mr. P. A. Karey, to the Park Department of this city with the request that it may be removed to some site in the Central Park or in one of the new parks above the Harlem River. The Central Park already contains as many buildings as it can well accommodate, and, even for the sake of historical associations, no other should be admitted within its precincts. But it is especially desirable to foster such associations in this country where commercial interests yearly destroy so many records of that past which the lengthening perspective of time will make more interesting to our descendants than it seems to be to the average American of to-day. In one of the proposed new parks Poe's Cottage should certainly be placed on some site where the landscape-gardener can make it an agreeable and perhaps a useful feature in his design.

"A good deal of attention," says the *Gardener's Chronicle*, "has been given from time to time to the old Japanese lacquer-ware, some very fine examples of which are contained in the South Kensington Museum, and a very complete set, showing the whole process of its manufacture, is exhibited in the Kew Museum. At the time this collection was got together a full report was prepared to accompany it, in which the mode of extracting the lacquer from the Rhus-tree, and the entire process of lacquering, were described. Considering the very large quantity of lacquered goods that now come to this country from Japan in the shape of boxes, trays, flower-stands, vases, etc., it would seem to be of some importance that the trees which yield the varnish should be preserved, and we now learn from a report from Hakodate that, as it was considered that the Lacquer-tree (*Rhus vernicifera*) would not succeed in the North, the few trees first planted were not looked after; but last year 157 young trees, averaging from five to eleven inches in girth, were tapped, and the yield was fairly satisfactory. The amount of sap was less than the same number of trees of a similar size would have yielded further south; but the proportion of water and foreign matter was only one-fourth, while the sap of southern trees is said to be generally nearly half water. After refining, the lacquer was also found to give a high polish, and it is, therefore, intended to promote the growth of the tree as much as possible. The young trees planted last year amounted to 150,582.

Three fields of botanical investigation in northern Mexico still invite the zealous and hardy explorer, and promise abundant harvests of new species and of more detailed information than now exists, of the distribution of the plants of this important phyto-geographical region. These fields are: the high northern Cordilleras and their Sonoran slopes—a region some 200 miles south of Arizona, where a day's walk will take the traveler from lofty summits down into warm valleys, which open out towards the lowlands of Sonora, and in which grow the Palm and the Orange. The second region is that part of north-eastern Mexico occupied by the northern extension of the Sierra Madre, and extending southward from Monterey for nearly 150 miles. A few plants were gathered forty or fifty years ago in the extreme northern part of this region by Gregg, Berlandier, Thurber, Parry, and during the past few years by Palmer, Sargent and Pringle; but its flora is practically unknown, except along its margin, although since the opening of the railroad to Saltillo it lies at the very doors of the United States. A good trail, with numerous branches, now leads from Saltillo through the heart of the mountains southward to San Louis Potosi, along which numerous missionary stations have been established. It will not be difficult, therefore, to see a great deal of this region in a comparatively short time, and without danger. In these mountains will be found, probably, the southern limit of many North American trees, or new species of trees of North American forms. The third region is on the Pacific side of the continent—a hundred miles to the west and south of Guadalajara. Here in the wonderful "barrancas" through which the rivers of the high plateau rush down towards the sea, and along the entire western slope of the Cordilleras, from Calima to Sonora, will, perhaps, be found the best botanizing the North American continent can now offer to the searcher for novelties. It is to the examination of these three regions that Mr. C. G. Pringle, who has already done so much to increase the knowledge of the flora of north Mexico, expects to pass a large part of the present year. He will start again for Mexico as soon as he has completed the distribution of his plants collected last year in New Leon and Chihuahua.

Catalogues Received.

Paul Butz & Son, Newcastle, Pa.;—Plants.—M. B. Faxon, 21 South Market Street, Boston, Mass.;—Vegetable and Flower Seeds.—H. W. Hales, Ridgewood, N. J.;—Chrysanthemums.—David Hill, Dundee, Kane County, Ill.;—Evergreens.—G. D. Howe, North Hadley, Mass.;—Potatoes.—Michel Plant and Seed Company, 718 Olive Street, St. Louis, Mo.;—Seeds, Bulbs, etc.—Parker & Wood, 49 North Market Street, Boston, Mass.;—Seeds, etc.—William Parry, Parry, N. J.;—Fruit and Ornamental Trees.—Siebrecht & Wadley, 409 Fifth Avenue, New York;—Orchids (Third Annual Orchid Exhibition).—Storrs & Harrison Co., Painesville, Ohio;—Seeds, Plants, etc.—E. & J. C. Williams, Montclair, N. J.;—Fruit and Ornamental Trees, Vines, etc.